

# **EXHIBIT 9**

**WILEY ELECTRICAL AND  
ELECTRONICS ENGINEERING  
DICTIONARY**

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**By the same author**

*English–Spanish, Spanish–English Electrical and Computer Engineering Dictionary*, published by John Wiley & Sons, Inc.

*Wiley’s English–Spanish, Spanish–English Business Dictionary*

*Wiley’s English–Spanish, Spanish–English Chemistry Dictionary*

*Wiley’s English–Spanish, Spanish–English Dictionary of Psychology and Psychiatry*

*English–Spanish Legal Dictionary, Second Edition*, published by Aspen Publishers

# **WILEY ELECTRICAL AND ELECTRONICS ENGINEERING DICTIONARY**

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**Steven M. Kaplan**  
Lexicographer



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## PREFACE AND NOTES ON THE USE OF THIS DICTIONARY

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This dictionary has over 35,000 entries, each of which occupies a place in one or more of the many areas of expertise encompassed by electrical and electronics engineering. All available sources were consulted, seeking to ascertain the exact manners in which each term is currently utilized. Textbooks, handbooks, treatises, instruction manuals, theses, articles, reports, Usenet postings, and so on, were researched during the process of selecting the terms and writing their definitions, with a good number of entries having multiple provided connotations.

The Internet was used extensively throughout this project, and if one or more persons or entities used a given technical term in the areas covered by this dictionary, there is a decent chance it was taken into consideration. If any given words or phrases were used frequently by multiple people, in varied settings, and when referring to serious endeavors, there is a pretty good chance it can be found in this dictionary. Even so, some terms that continue to appear may not be found here. If a user feels that a given word or phrase not found in this dictionary should be added to a future edition, or wishes to otherwise comment on this book, an email may be sent to the author at: [wileyieee@yahoo.com](mailto:wileyieee@yahoo.com).

There are no special rules for the use of this dictionary. The user simply looks up the desired term to find its definition, plus other practical information when appropriate. When a word or phrase is the same as another, this is clearly stated so as to easily find the definition.

This dictionary could not have been prepared without the contributions of George J. Telecki, Associate Publisher at John Wiley & Sons. He had the idea for this dictionary, suggested the approach and format, and throughout the project provided inestimable support and guidance.

This dictionary has been prepared within the exquisite nature settings of Northwestern Austria. Mr. Wolfgang Gießler is the person who determined that I should be allowed to perform my work as an author in this wonderful country. I am tremendously grateful to him for kindly providing me with the opportunity to live here.

Steven M. Kaplan

*Austria, Europe  
October, 2003*

**floppy-disk drive** A disk drive which reads data from, and writes data to, a **floppy disk**. Also called **floppy drive**.

**floppy drive** Same as **floppy-disk drive**.

**floppy optical** Same as **floptical**.

**flops** Same as **FLOPS**.

**FLOPS** Abbreviation of **floating-point operations per second**. The number of floating-point operations performed per second. It is a commonly used benchmark to measure the speed of a processor. Such speeds are usually indicated in multiples of FLOPS, such as gigaflops, or teraflops.

**floptical** Acronym for **floppy optical**. A disk or disk drive which incorporates a combination of magnetic and optical technologies, to provide more storage capacity and speed than ordinary floppy disks.

**flow** 1. A smooth and uninterrupted motion, progress, or sequence. For example, the movement of a fluid through a duct. 2. The movement of electric charges. For instance, the flow of electrons through a conductor. 3. The movement of information through a system. Also, the sequence in which operations are performed. For example, the movement from point to point within a flowchart.

**flow chart** Same as **flowchart**.

**flow control** A system which regulates a flow through a given channel, such as a communications line, a conduction path, or a duct. For instance, it may entail a process which times transmitted signals in a manner that faster devices can communicate with slower devices without data loss.

**flow diagram** Same as **flowchart**.

**flow direction** The direction, usually indicated by arrows, in which operations proceed in a **flowchart**.

**flow line** In a **flowchart**, a line or arrow indicating the direction in which operations proceed. Also spelled **flowline**.

**flow meter** Same as **flowmeter**.

**flow soldering** A automated method of soldering electronic components to circuit boards, in which molten solder is pumped from a reservoir through a spout to form a wave. The board is passed through the wave via an inclined conveyor. This technique minimizes the heating of the board. Also called **wave soldering**.

**flowchart** Also spelled **flow chart**. Also called **flow diagram**, or **control diagram**. 1. A diagram which uses a set of standard symbols to represent the sequence of operations of a system. 2. A diagram which uses a set of standard symbols to represent the sequence of operations of a computer program or system. Such a chart may show, for instance, the flow of data, or the steps of a subroutine.

**flowline** Same as **flow line**.

**flowmeter** An instrument which measures and indicates the flow of a fluid. Also spelled **flow meter**. Also called **fluid meter**, **fluid-flow meter**, or **velocimeter** (2).

**fluctuating current** A DC whose value varies in an irregular manner.

**fluctuation noise** Noise which fluctuates in a random manner, and which usually is the aggregate of a large number of overlapping transient disturbances. The occurrence and magnitude of such noise can not be predicted. Examples include electrical noise and cosmic noise. Also called **random noise**.

**fluence** The passing of particles, such as electrons or photons, through a given area, such as a square centimeter. May be expressed, for instance, in particles per second. Also called **particle fluence**.

**fluid** A form of matter which has no defined shape, and whose atoms or molecules move freely past one another. A fluid is usually a gas or a liquid, and tends to assume the shape of its container.

**fluid computer** A digital computer which utilizes logic elements powered by a fluid, such as air. Such a computer has no electronic circuits, nor any moving parts.

**fluid damping** The use of a fluid to reduce or limit the amplitude of a mechanical motion, such as a vibration. An example is the use of a ferrofluid for damping the motion of a high-frequency speaker. Also called **viscous damping**.

**fluid-flow meter** Same as **flowmeter**.

**fluid-level indicator** An electronic device, instrument, or system which indicates the level of a fluid.

**fluid logic** Logic operations performed using interactions between fluids. Such operations do not utilize electricity, nor require any moving parts. Seen, for instance, in a fluid computer.

**fluid meter** Same as **flowmeter**.

**fluidic** 1. Of, pertaining to, or characteristic of a **fluid**. Also, in the form of a **fluid**. 2. Pertaining to, controlled by, or employing **fluidics**.

**fluidics** A technology which employs fluids in motion to carry out functions that would otherwise be performed by electrical and electronic circuits. Such functions include those involved in control, amplification, processing, logic, and sensing. Devices employing this technology have no moving parts, are characterized by high reliability, ease of maintenance, and extremely high resistance to electromagnetic interference. Used, for instance, where electronic circuits can not be used, such as explosive environments.

**fluorescence** The emission of electromagnetic radiation, such as light, by a body which has been excited by another form of energy, such as electron bombardment. Fluorescence is a form of luminescence whose persistence is less than about  $10^{-8}$  second, while **phosphorescence** persists longer. That is, within  $10^{-8}$  second or sooner from the excitation ceasing, so does fluorescence. Used, for instance, in spectroscopy, CRTs, and in lighting.

**fluorescence microscope** A light microscope which utilizes fluorescent light to analyze specimens. Well suited for the study of living cells without damaging samples. Also called **fluorescent microscope**.

**fluorescence microscopy** The use of a **fluorescence microscope** for the analysis of specimens. Also called **fluorescent microscopy**.

**fluorescent lamp** A gas-discharge lamp whose light is produced through **fluorescence**. Such a lamp usually consists of a tube coated with a fluorescent substance, and contains mercury vapor. A current passing through the tube excites the vapor, whose ultraviolet emissions excite the coating, which in turn emits visible light. Also called **fluorescent tube**.

**fluorescent material** A material which emits electromagnetic radiation, especially light, when irradiated with another form of energy, such as X-rays or an electron beam.

**fluorescent microscope** Same as **fluorescence microscope**.

**fluorescent microscopy** Same as **fluorescence microscopy**.

**fluorescent screen** A screen coated with a **fluorescent substance**. Used, for instance, in CRTs, fluoroscopes, or scintillation counters.

**fluorescent substance** A substance which emits electromagnetic radiation, especially light, when irradiated with another form of energy, such as X-rays or an electron beam. Examples include cesium chloride, and cadmium sulfide.

**fluorescent tube** Same as **fluorescent lamp**.

**fluorinated ethylene propylene resin** A thermoplastic material with excellent electrical insulating properties, in addition to resistance to heat and chemicals. Used, for instance, for wire and cable insulation. Its abbreviation is **FEP resin**.